



3112704
Alcoa Primary Metals
Energy Division-Sandow Mine
3990 John D. Harper Road
PO Box 1491
Rockdale, TX 76567-1491 USA

October 30, 2015

Mr. John E. Caudle, Director
Surface Mining and Reclamation Division
Railroad Commission of Texas
P.O. Box 12967
Austin, Texas 78711-2967

Railroad Commission
of Texas
RECEIVED

OCT 30 2015

Surface Mining Division

**RE: Alcoa Sandow Mine, Permit No. 1F
Revision No. 52
Postmine Landuse Revision
Alcoa Submittal 2015-49**

Dear Mr. Caudle:

Alcoa Inc. is requesting a revision to the approved Postmine Landuse maps for the Sandow Mine. The current postmine landuse map was approved by Commission Letter dated September 26, 2014 as Revision 49. Alcoa is requesting a revision to the postmine landuse for specific Industrial and Commercial (I/C) landuse categories for: 1) areas utilized as part of the Alcoa Smelter Complex, Sandow Units 1-2-3, Sandow Unit 4 and Sandow Unit 5 landfill disposal programs; and, 2) areas utilized as components for Alcoa's groundwater and surface water conjunctive use systems. All of the areas proposed are covered under either: 1) deed recorded covenants that are registered and overseen by the Texas Commission on Environmental Quality (TCEQ); 2) surface water rights permits issued by TCEQ; and/or, 3) groundwater pumping permits issued by the Post Oak Savannah Groundwater Conservation District. A detailed discussion of Alcoa's Industrial and Commercial landuse changes is attached under **Tab 1** in the Revision 52 application.

Alcoa provides with this request revised Section 147 text, attached under **Tab 2**, along with revised land use maps, attached under **Tab 3 and Tab 4**, and a CD containing the electronic files associated with this Revision 52, attached under **Tab 5**. Please note that the postmine landuse map has been revised to correct the approved I/C landuse boundary surrounding the Office Complex. The tables and maps specific to Section 147 have been revised to reflect these boundaries.

Documents referenced in the detailed discussion document are also included in the Revision 52 application under **Tab 6 through Tab 27**. For the convenience of RCT staff reviewing Alcoa's Revision 52 application, all of the information provided in this October 30, 2015 submittal is listed in the attached **TABLE A**.

A voucher in the amount of \$500 is provided along with a completed SMRD-2C as required by the Regulations for review of this revision 52.

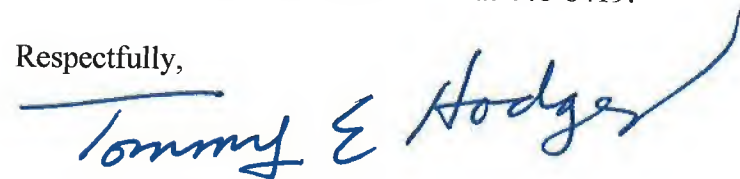
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TABLE A

Tab	Description of Attachment
1	Detailed Industrial and Commercial Landuse Change Discussion Document
2	Revised Section 147 Language
3	Revised Landuse Map Plate 147-1
4	Revised Landuse Map Plate 147-2
5	Revision 52 CD
6	Alcoa Aerial Photo circa 1951 Plate 52-1
7	Alcoa Aerial Photo circa 1951 Plate 52-2
8	Alcoa Aerial Photo circa 1951 Plate 52-3
9	Alcoa Aerial Photo circa 1981 Plate 52-4
10	Alcoa Aerial Photo AX Landfill Area September 2015 Plate 52-5
11	Alcoa Landfill Control Number Identification and Deed Recording Map Plate 52-6
12	Alcoa Landfill Control Number Identification and Deed Recording 1981 Photo Plate 52-6A
13	Alcoa Landfill Control Number Identification and Deed Recording 2015 Photo Plate 52-6B
14	Alcoa Landfill and Deed Recorded Area Power Point Briefing Deck
15	Alcoa Landfill and Deed Recorded Area Control Document
16	Alcoa Landfill and Deed Recorded Area Control Document CD with Power Point Deck
17	Alcoa Conjunctive Groundwater and Surface Water Use System Map Plate 52-7
18	Alcoa Conjunctive Groundwater and Surface Water Use Process Flow Diagram A-042907-2-RT
19	Alcoa Conjunctive Groundwater and Surface Water Use Process Flow Diagram A-042907-3-RT
20	Alcoa Groundwater and Surface Water Conjunctive Use Brazos Water Master Power Point Briefing
21	Alcoa 2015 March 31 Conjunctive Use TCEQ Water Right Permit Amendment
22	Post Oak Savannah Groundwater District Historic Use Permit POS-HUP-0330
23	Post Oak Savannah Groundwater District Drilling and Operating Permit POS-D&O-0148
24	Declaration of Restrictive Covenants and Dedication of Water
25	EXHIBIT A to Declaration of Restrictive Covenants and Dedication of Water
26	Declaration of Restrictive Covenants to Prohibit Residential Use
27	EXHIBIT A to Declaration of Restrictive Covenants to Prohibit Residential Use

If you require additional information, or if you have any questions or comments, please call Dennis Hill at 512-446-8886 or me at 446-8419.

Respectfully,



Tommy E. Hodges, P.E.
Alcoa Inc.
Rockdale Operations
Energy Manager

Attachments

Cc:

Roger Nevola
John Holsinger

File Ref. No. _____

Fee _____

(for official use only)

SMRD-2C
03/03/03

RAILROAD COMMISSION OF TEXAS
SURFACE MINING AND RECLAMATION DIVISION

Application for Nonsignificant Revision to Coal Mining Operations Permit

Complete all applicable portions. Please submit three (3) copies of your application on standard size paper (8 1/2" x 11", except for maps) to the Director of the Surface Mining and Reclamation Division. See *Texas Coal Mining Regulations* and the *Texas Surface Coal Mining and Reclamation Act* for information.

Name of Applicant:

ALCOA INC.

Name of Mining Operation:

ALCOA SANDOW MINE

Permit No. 1F

Permanent Mailing Address:

P.O. BOX 1491

Street or P O Box

ROCKDALETX76567

CityStateZip Code

Contact Person

TOMMY E. HODGES, P.E.

Telephone: 512-446-8419

Revision Description

INDUSTRIAL AND COMMERCIAL LAND USE - REVISION 52

Type of Revision [check appropriate box(s)]

Administrative ☐ Operation Plan ☐ Reclamation Plan ☒ Incidental Boundary Revision ☐

Section of Permit to be Revised [check appropriate box(s)]

Legal, Financial and Compliance-Related Info (Administrative Information):

Right of Entry/Property	§§12.116, 12.117	<input type="checkbox"/>	Other Permits	§12.121	<input type="checkbox"/>
Ownership and Control	§12.116	<input type="checkbox"/>	Cultural Resources	§§12.125(2), 12.151	<input type="checkbox"/>
Insurance	§12.120	<input type="checkbox"/>			

Environmental Resources:

Geology/Overburden Data	§12.127	<input type="checkbox"/>	Soils	§12.134	<input type="checkbox"/>
Ground Water	§§12.128, 12.130	<input type="checkbox"/>	Land Use	§12.135	<input type="checkbox"/>
Surface Water	§§12.129, 12.130	<input type="checkbox"/>	Map/Sections/Plans	§§12.136, 12.137	<input type="checkbox"/>
Vegetation	§12.132	<input type="checkbox"/>	Prime Farmland	§12.138	<input type="checkbox"/>
Fish and Wildlife Resources	§12.133	<input type="checkbox"/>			

Operation Plan:

Mine Plan	§12.139	<input type="checkbox"/>	Maps and Plans	§12.142	<input type="checkbox"/>
Blasting	§12.141	<input type="checkbox"/>	Air Pollution Control Plan	§12.143	<input type="checkbox"/>

Reclamation Plan:

Fish & Wildlife Plan	§12.144	<input type="checkbox"/>	Ponds	§12.148	
Reclamation Timetable	§12.145(b)(1)	<input type="checkbox"/>	Temporary Impoundment		<input type="checkbox"/>
Reclamation Cost Estimate	§12.145(b)(2)	<input type="checkbox"/>	Temporary Sediment Pond		<input type="checkbox"/>
Backfilling and Grading	§12.145(b)(3)	<input type="checkbox"/>	Permanent Sediment Pond		<input type="checkbox"/>
Topsoil Handling	§12.145(b)(4)	<input type="checkbox"/>	Permanent Impoundment		<input type="checkbox"/>
Revegetation Plan	§12.145(b)(5)(A-F)	<input type="checkbox"/>	Fresh Water Diversion		<input type="checkbox"/>
Soil Monitoring Plan	§12.145(b)(5)(G)	<input type="checkbox"/>	Disturbed Water Diversion		<input type="checkbox"/>
Conservation of Coal	§12.145(b)(6)	<input type="checkbox"/>	Mining Near Underground Mining	§12.149	<input type="checkbox"/>
AFM/TFM Handling Plan	§12.145(b)(7)	<input type="checkbox"/>	Stream Diversions	§12.150	<input type="checkbox"/>
Well/Hole Plugging	§12.145(b)(8)	<input type="checkbox"/>	Relocation/Closure of Public Roads	§12.152	<input type="checkbox"/>
Hydrologic Reclamation Plan	§12.146(a)	<input type="checkbox"/>	Road Systems	§12.154	
Long-Term Ground-Water Monitoring	§12.146(b)	<input type="checkbox"/>	Temporary Ancillary Road		<input type="checkbox"/>
Long-Term Surface-Water Monitoring	§12.146(c)	<input type="checkbox"/>	Temporary Primary Road		<input type="checkbox"/>
Probable Hydrologic Consequences	§12.146(d)	<input type="checkbox"/>	Permanent Primary Road		<input type="checkbox"/>
Postmine Land Use	§12.147	<input checked="" type="checkbox"/>			

Alcoa Sandow Mine Revision Number 52 Postmine Landuse Changes

Introduction

Alcoa Inc. Sandow Mine is requesting a revision to the approved postmine landuse maps on 407.29 acres of land contained in the Sandow Mine, which includes revision to industrial / commercial landuse (I / C) on 65.62 acres of land that comprises permanent impoundment Pond 026 and on 341.67 acres of lands previously approved as pasture. Alcoa is requesting these changes in support of legacy, current and long term activities at the Rockdale Industrial Complex for the postmine landuse on specific Industrial and Commercial landuse categories for: 1) areas utilized as part of the Alcoa Smelter Complex, Sandow Units 1-2-3, Sandow Unit 4 and Sandow Unit 5 landfill and waste management programs; and, 2) areas utilized as components for Alcoa's groundwater and surface water conjunctive use systems. All of the areas proposed are covered under either: 1) deed recorded covenants that are registered and overseen by the Texas Commission on Environmental Quality (TCEQ); 2) surface water rights permits issued by TCEQ; and / or, 3) groundwater pumping permits issued by the Post Oak Savannah Groundwater Conservation District.

Listed below in Table 1 and shown in red on Plate 147-1 and Plate 147-2 (included under **TAB 3** and **TAB 4** of this application) are the proposed Industrial and Commercial landuse change areas.

Table 1

Ledger #	Area	I / C Use	Plate
1	A1 Transportation Road	Waste Management Program	147-2
2	North AX Landfill Corridor	Waste Management Program	147-2
3	Waste Management Road From A1 Landfill to South Superspan	Waste Management Program	147-2
4	Central Stockpile Area Legacy Landfill Area	Waste Management Program	147-2
5	Water Channel from Pond C7A to Pond 26	Conjunctive Use Program	147-2
6	Pond 26	Conjunctive Use Program	147-2
7	Water Channel from Pond 26 to C Endlake	Conjunctive Use Program	147-2
8	Pipeline Corridor from Pond 26 to West AX Endlake	Conjunctive Use Program	147-2
9	East Slope and Bench of West AX Endlake	Conjunctive Use Program	147-2
10	Duck Pond	Conjunctive Use Program	147-2
11	East AX Landfill to South Endlakes Pipeline Corridor	Conjunctive Use Program	147-2
12	East AX Landfill to South Endlakes Pipeline Corridor	Conjunctive Use Program	147-1

Rockdale Industrial Complex Landfill and Waste Management Programs

Commercial mining for lignite coal within the Rockdale Industrial Complex area first commenced in the late 1890's and continued through the late 1940's. Alcoa acquired the original lignite mine works in 1951 in preparation for development of their Rockdale Texas integrated coal mining, power generation and aluminum smelting operation. The extent of these existing mine works were captured in a 1951 aerial photograph which is included under **TAB 6** of this application as Plate 52-1. Shortly after commissioning of the Rockdale Industrial Complex power and smelting facilities, solid industrial wastes were placed in various areas of

Alcoa Sandow Mine Revision Number 52 Postmine Landuse Changes

the old existing mine works. Placement of these wastes continued for several decades until such time that permitted waste management landfills were constructed and commissioned. While these “legacy” waste mine works old disposal sites were created prior to permitting and regulatory oversight requirements, their existence is documented with the Texas Commission on Environmental Quality and is managed in accordance. In addition, while the exact extent of the legacy waste mine works old disposal sites are unknown some effort to map their extent has been completed. The earliest legacy waste mine works old disposal sites, which include ODS1 and ODS2 along with an image of the current Rockdale Industrial Complex, have been superimposed upon the 1951 mine works photograph which is included under **TAB 7 and TAB 8** of this application as Plate 52-2 and Plate 52-3. For convenience of reference, an outline of ODS1 and ODS2 along with an image of the current Rockdale Industrial Complex has been superimposed upon the 1981 aerial photograph which is included under **TAB 9** of this application as Plate 52-4. This Plate shows the progression of mining and landfill development over time. Plate 52-5, which is included under **TAB 10** of this application, is a September 2015 aerial photograph of the most recent landfill construction activities including West AX.

The known extent of all Rockdale Industrial Complex waste disposal, landfills and beneficial use reuse areas have been deed recorded as shown on Plate 52-6, which is included under **TAB 11** of this application. For convenience of reference, the deed recording information from Plate 52-6 has been superimposed upon the 1981 aerial photograph, which is included under **TAB 12** of this application as Plate 52-6A, and Alcoa’s most current 2015 aerial photograph which is included under **TAB 13** of this application as Plate 52-6B.

Alcoa maintains a comprehensive landfill summary Microsoft Office Power Point briefing deck, which is included under **TAB 14** of this application, along with an interactive hyperlinked Microsoft Word document which contains PDF versions of all deed recordations, which is included under **TAB 15** of this application. The information provided under **TAB 11** through **TAB 15** is included in the application on a CD located under **TAB 16** of this application.

The Rockdale Industrial Complex waste disposal, landfills and beneficial use reuse areas deed recorded as shown on Plate 52-6 will exist in perpetuity as industrial and commercial structures or areas. As such, Alcoa is requesting in this Revision 52 the landuse changes to industrial and commercial for items 1 through 4 as detailed on Table 1. The Central Crusher and Stockpile area overlays multiple legacy waste mine works old disposal sites and excavation in this area is strictly prohibited and monitored. While there is transportation and storage of lignite coal in the proposed Revision 52 industrial and commercial landuse change, there is no processing of lignite coal in these areas. Several of the transportation corridor roads included in proposed Revision 52 industrial and commercial landuse change specifically serve as the capping mechanism for several legacy waste mine works old disposal sites. All of the industrial and commercial areas proposed in Revision 52 should be considered an extension of the coal combustion residual

processing systems or lignite fuel transpiration and storage for Sandow Steam Electric Stations 4 and 5 as they are operated and managed by power generating personnel.

Alcoa's Groundwater and Surface Water Conjunctive Water Use Systems

In order to safely surface mine the Sandow lignite reserves, Alcoa installed and operated an extensive Simsboro aquifer underburden groundwater depressurization system for over 27 years. This groundwater depressurization initially commenced in 1988 and reached its peak in 2002 with a total of 79 Simsboro wells (250 to 1,000 gallons per minute each) which collectively produced over 32,500 acre-feet of groundwater in that calendar year. During this period of mining related underburden groundwater depressurization, Alcoa diverted the majority of this groundwater to industrial use. Concurrent with the conclusion of mining at Sandow Mine in 2005, Alcoa converted its Simsboro groundwater pumping wells from the jurisdiction of mining regulation under the Railroad Commission of Texas to the jurisdiction and regulation of local Groundwater Conservation Districts. Currently Alcoa has 69 legacy depressurization wells located in Milam and Lee Counties of Texas. There are 40 active wells in Milam County permitted under the jurisdiction of Post Oak Savannah Groundwater Conservation District (Post Oak) and 8 active wells located in Lee County permitted under the jurisdiction of Lost Pine Groundwater Conservation District (Lost Pines). Alcoa currently holds two active Post Oak permits related to its Milam County fee properties. On December 11, 2007 Alcoa was issued Historic Use Groundwater Permit POS-HUP-0330 (located under **TAB 22** of this application), granting the annual production of 15,000 acre-feet of Simsboro groundwater per year. This permit was subsequently amended on November 11, 2011 and currently authorizes production from 61 groundwater wells. The historic use designation is directly correlated to Alcoa's diversion of mine related underburden depressurization groundwater production to the industrial complex from 1988 through 2005. This permit authorizes the use of groundwater for industrial, agriculture and municipal purposes, but only within the confines of Alcoa's 24,552 acres of Milam County property. Historic use permits have superior rights over all other types of permits issued by Post Oak in the event of priority allocation or curtailments. While Alcoa produced over 32,500 acre-feet per year of Simsboro groundwater during the peak of its underburden depressurization, Post Oak insisted on authorizing only 15,000 acre-feet per year under the historic use permit and required any additional production to be covered under a separately issued drilling and operating permit. On November 13, 2012 Alcoa was issued Drilling and Operating Permit POS-D&O-0148 (located under **TAB 23** of this application), granting the annual production of 25,000 acre-feet of Simsboro groundwater per year. This renewable permit has a term of 40 years and authorizes incremental production of up to 25,000 acre-feet per year of Simsboro groundwater from the same exact 61 wells authorized under the historic use permit. The drilling and operating permit also authorizes the construction and operation of 24 new Simsboro groundwater wells. As with the historical use permit, this drilling and operating permit authorizes the use of groundwater for industrial, agriculture and municipal purposes, but only within the confines of Alcoa's 24,552 acres of Milam County property. Since groundwater production is authorized under both permits for the same 61 wells, special accounting is required for allocation of production on a well by well case

Alcoa Sandow Mine Revision Number 52 Postmine Landuse Changes

under each permit. In total, the historic use permit, along with the drilling and operating permit, authorized up to 40,000 acre-feet of Simsboro groundwater production per year.

Alcoa has two 1951 surface water right Certificates of Adjudication which permit the diversion of state water for the purpose of operating Alcoa Lake Treatment System. In addition, Alcoa has five other water rights permits associated with incised reservoirs created as a result of mining reclamation. These reservoir water rights permits authorize the capture of rain runoff and also authorize the storage and subsequent pumping of groundwater from these mine reservoirs. Alcoa Lake is the cooling water reservoir for Alcoa's Smelter Complex, Luminant's Sandow Unit 4 and Sandow Power's Unit 5 and at maximum pool elevation covers approximately 1,021 acres of fee simple property within the Industrial Commercial Zone. Alcoa Lake holds 15,560 acre-feet of water. The operation of Alcoa Lake as a cooling water reservoir can require up to 12,000 acre-feet of groundwater and 12,000 acre-feet of surface water annually. While the groundwater comes from Alcoa's Sandow Mine legacy underburden depressurization well field, the surface water component comes from a combination of Little River Diversions, Sandy Creek rainfall capture, Sandow Mine reclamation reservoir diversions and Alcoa's Brazos River stored surface water contract. Alcoa has a 1951 surface water diversion right from the Little River in the form of a Certificate of Adjudication which authorizes up to 18,000 acre-feet per year of surface water diversion or capture (in combination with the Sandy Creek Certificates of Adjudication). Alcoa has a pumping system located on the Little River at Minerva, Texas which is capable of pumping up to 70 cubic feet per second. This surface water is transported via a 12 mile long 36 inch diameter concrete pipeline located on private property on which Alcoa has long term pipeline easements. This Certificate of Adjudication and pumping system is dedicated to the operation of Alcoa Lake and the power plants. Alcoa Lake was constructed by installing an earthen impoundment on a section of Sandy Creek. Alcoa holds a 1951 surface water right for capturing waters of the state from Sandy Creek in the form of a Certificate of Adjudication which authorizes up to 18,000 acre-feet per year of surface water diversion or capture (in combination with the Little River Certificates of Adjudication). This Certificate of Adjudication is dedicated to the operation of Alcoa Lake and the power plants. Alcoa holds a surface water contract with the Brazos River Authority to purchase up to 5,000 acre-feet per year of stored surface water from Granger Lake. This water is released into the Little River and diverted by Alcoa through its Little River pumping station during times when surface water is not available under the Little River Certificates of Adjudication.

As a result of its surface mining operations and final reclamation, Alcoa created 13 incised reservoirs (end lakes and ponds) within the Sandow Mine property which required surface water diversion and storage permits. While these end lakes and ponds cover a total of 939 acres of fee property, they range in depth from 30 to over 200 feet and contain 32,819 acre-feet of water. Alcoa's water rights permits for C End Lake, Pond 26, East AX End Lake, and Alcoa Lake authorize the use of these reservoirs for the storage and diversion of both groundwater and surface water conjunctively. Alcoa has installed siphons on Alcoa Lake that permit the spilling of stored surface water and groundwater to Pond 26 and C End Lake. In addition, Alcoa has installed barge pumps on C End Lake which allow diversion of stored water back to Alcoa Lake. This also allows Alcoa to pump surface water

Alcoa Sandow Mine Revision Number 52 Postmine Landuse Changes

from the Little River and release this water into the downstream reservoirs for use during periods of low flow in the Little River. Alcoa has a groundwater collection basin equipped with lift pumps that facilitate pumping of groundwater directly to Alcoa Lake. Both Pond 26 and the East AX End Lake have barge pumps that allow for the pumping of stored water to various places in the Rockdale Industrial Complex. These are critical integrated systems which allow for the conjunctive use of surface water and groundwater for drought mitigation. These conjunctive use systems have been recognized as benchmark by the Brazos Water Master and the Texas Commission on Environmental Quality (TCEQ). A summary of Alcoa's conjunctive groundwater and surface water use systems Microsoft Power Point Briefing presentation to these two organizations is included in this application under **TAB 20**. In 2015, Alcoa filed for amendments to its water rights in support of expanding the conjunctive groundwater and surface water use system via a TCEQ Water Right Permit Amendment (included in this application under **TAB 21**). Details of Alcoa's conjunctive groundwater and surface water use systems are shown on Plate-52-7, Process Flow Diagram A-042907-2-RT and Process Flow Diagram A-042907-3-RT (provided in the application under **TAB 17**, **TAB 18** and **TAB 19** respectively).

Alcoa is requesting in this Revision 52, the change in landuse to industrial and commercial for items 4 through 12 as detailed on Table 1 in support of Alcoa's groundwater and surface water conjunctive use plans. Areas proposed to be included for these purposes are approved permanent impoundment Pond 026, Pond 026 Spillway and Pond 026 Inlet, a portion of the dragline walkway extending from the AX mine block to Alcoa's south endlakes, a prelaw pond known as Duck Pond, and a corridor extending from Pond 026 to the newly completed AX Reservoir. Alcoa currently operates a comprehensive conjunctive water use system approved by the TCEQ and Post Oak Savannah Groundwater Conservation District (POSGCD) to utilized Alcoa's industrial / commercial groundwater wells, Alcoa's surface water rights from Little River and the endlakes located in Sandow, and Alcoa's water rights to Alcoa Lake. Through this conjunctive use permit, Alcoa uses a series of pumps and pipelines positioned in the various lakes to move groundwater produced under the POSGCD and surface water rights Alcoa owns in the various endlakes, Alcoa Lake and Little River to provide makeup water for use in electrical generation at Sandow Units 4 and 5. Alcoa's endlakes, including Pond 026 have approved water rights through the TCEQ that allow movement of water through the system. Alcoa currently operates two off-channel reservoirs for the purpose of storing these waters; the newly completed AX Reservoir and North F Endlake. With this request, Alcoa is proposing the addition of Pond 026, along with its inlets and outlets, which are utilized to move water from Alcoa Lake to the reservoirs, and a corridor from Pond 026 to the AX Reservoir for a pipeline that is currently being constructed. Alcoa will install a pumping system in Pond 026 for movement of water released from Alcoa Lake to the AX Reservoir for storage and eventual pumping back to Alcoa Lake. Alcoa has plans to install a pumping system in the south Sandow Mine Endlake chain and install a companion pipeline to transport this water to the AX Reservoir.

Permanent Deed Recordings

Specific Rockdale Industrial Complex waste disposal, landfills and beneficial use reuse areas are deed recorded as shown on Plate 52-6 and will exist in perpetuity as industrial and commercial structures or areas. In addition, subsequent to approval of Alcoa's Revision 52 industrial and commercial landuse changes, Alcoa will file two additional overlapping deed restrictions: 1) encompassing 4521.737 acres from the production of any groundwater except exclusively for on-site industrial use only, as detailed in the "Declaration of Restrictive Covenants and Dedication of Water", included with this application under **TAB 24** and **TAB 25**; and, 2) encompassing 5913.995 acres from any future Residential Use, as detailed in the "Declaration of Restrictive Covenants to Prohibit Residential Use" included with this application under **TAB 26** and **TAB 27**. The additional deed recordations are further evidence of the permanent industrial and commercial nature of these properties.

Summary

) Alcoa Inc. is requesting a revision to the approved Postmine Landuse maps for the Sandow Mine. The current postmine landuse map was approved by Commission Letter dated September 26, 2014 as Revision 49. Alcoa is requesting a revision to the postmine landuse for specific Industrial and Commercial (I / C) landuse categories for: 1) areas utilized as part of the Alcoa Smelter Complex, Sandow Units 1-2-3, Sandow Unit 4 and Sandow Unit 5 landfill disposal programs; and, 2) areas utilized as components for Alcoa's groundwater and surface water conjunctive use systems. All of the areas proposed are covered under either: 1) deed recorded covenants that are registered and overseen by the Texas Commission on Environmental Quality (TCEQ); 2) surface water rights permits issued by TCEQ; and / or, 3) groundwater pumping permits issued by the Post Oak Savannah Groundwater Conservation District.

ENGINEERING CERTIFICATION

I, Dennis Wade Hill, a licensed professional engineer in the State of Texas, do hereby certify that the Postmine Landuse table, maps and text provided in Revision 52 of the Sandow Mine, Permit 1F Postmine Landuse Revision were prepared under my direct supervision, and to the best of my knowledge and belief are true and correct and comply with the requirements of §12.147 of the Coal Mining Regulations of the Railroad Commission of Texas.



Dennis Wade Hill

Date 10/26/15

Dennis Wade Hill
P.E. No. 84679
Hill Engineering P.L.L.C.
TBPE Registration No. 3532

RECLAMATION PLAN: POSTMINING LAND USES.

- (a) *Each plan shall contain a detailed description of the proposed use, following reclamation, of the land within the proposed permit area, including a discussion of the utility and capacity of the reclaimed land to support a variety of alternative uses, and the relationship of the proposed use to existing land-use policies and plans. This description shall explain:*
- (1) *how the proposed postmining land use is to be achieved and the necessary support activities which may be needed to achieve the proposed land use*

The Alcoa Inc. reclamation plan provides a post-mining land use consistent with all applicable State and local land use plans and programs, and is also consistent with the surface owner plans. The pre-mine land uses of all the proposed acres in the permit area were classified, and this data is presented in Section 12.135 (Land-Use Information).

The postmine land use in the proposed Sandow Mine has been selected for pastureland, fish and wildlife habitat, industrial/commercial, and developed water resources. Proposed mining activity will result in 9,939 acres being disturbed, and Alcoa Inc. proposes to reclaim 6,630 of these acres to pastureland, 387 acres to fish and wildlife habitat, 2,364 acres to industrial commercial, and 558 acres to developed water resources. The proposed reclamation plan will allow the land to be restored to a post mining land use state that is capable of supporting the same or better uses than the pre mining land use state.

The reclaimed land that is proposed to be used as pastureland is shown conceptually on Plate .147-1 and Plate .147-2. This will be achieved by planting reclaimed land with introduced forage grass species, primarily hybrid bermudagrass and other compatible species, and/or native grasses species. This diversity will enable established vegetation communities to withstand disease or pests specific to one species and will ensure the continuation of stands during adverse environmental conditions. In keeping with established land management practices in the area, landowners will utilize reclaimed pastureland for livestock grazing and hay production.

As discussed in Sections 12.144 (Fish and Wildlife Plan) and 12.145 (Reclamation Plan), grass, trees, vines, and shrubs will be planted to establish fish and wildlife habitat features to enhance wildlife use. The reclaimed land that is proposed to be used as fish and wildlife land use is shown conceptually on Plate .147-1 and Plate .147-2. Reclaimed wetland features will be located in such a manner to enhance habitat quality, especially for waterfowl and aquatic life. The locations of these features are subject to change. These features will be located during the reclamation process in such a manner as to mitigate wetland areas, provide appropriate wildlife corridors, and enhance the post-mining pastureland to a higher and more productive use than existed prior to mining. Details about these areas may be found in Sections 12.144 (Fish and Wildlife Plan) and 12.145 (Reclamation Plan: General Requirements) of this permit application.

Industrial/commercial includes rerouted FM Road 112 and County Road 314, municipal water wells, and Class II/Class III land fill. This facility will be operated under TCEQ guidelines and permit requirements.

Developed water resources displayed on Plate .147-1 and Plate .147-2 include the reclamation ponds and selected sedimentation ponds left as a permanent impoundment.

Table .147-1 reflects the pre- and postmining acreage proposed to be disturbed by mining activities through the end of the permit term. Table .147-1 also shows the pre- and postmining percentages of each of the land uses prior to and after reclamation.

TABLE .147-1
PREMINE – POSTMINE COMPARISON

Land Use Category	Premine		Postmine	
	Acres	Areal %	Acres	Areal %
Pastureland	3,314	33.4%	6,630	66.7%
Fish and Wildlife Habitat	0	0%	387	3.9%
Industrial/Commercial	1,142	11.5%	2,364	23.8%
Developed Water Resources	92	0.9%	558	5.6%
Cropland	12	0.1%	0	0%
Grazingland	4,529	45.5%	0	0%
Undeveloped Land	850	8.6%	0	0%
Total	9,939	100%	9,939	100%

Support activities to achieve the proposed postmine land uses include vegetation establishment and management practices and wildlife management and protection measures, particularly in the early post-reclamation years when the ecology is fragile. Pasturelands will be fertilized according to soil analyses and production goals. If grazing is used as a management tool, stocking rates will be based on vegetative production goals determined by growing season rainfall, fertility requirements, rotational grazing schedules, etc. in order to maintain a healthy and viable vegetative stand. To ensure over-grazing does not occur, livestock herd sizes will be maintained at or below carrying capacity. To ensure over-browsing does not occur, White-tailed deer herds will be maintained at or below carrying capacity through hunting. Wildlife habitat will be managed such that natural succession will occur. Industrial/commercial land will have sufficient ground cover to control erosion.

Water resources will be developed for livestock and wildlife usage. Ponds will be utilized as an integral part of each grazing system. Aquatic vegetation will be planted or allowed to volunteer in ponds to improve waterfowl habitat.

Postmining land uses were considered when developing the plan for regrading disturbed areas. Reclamation activities are designed to establish an effective permanent vegetative cover that, at the minimum, equals the vegetation cover and productivity present prior to mining. Current operating experience has shown that agricultural equipment for such practices as fertilizing, mowing, haying and other agricultural practices will easily traverse the reclaimed area. Livestock grazing will not be limited by postmining topography.

Pastureland will be reclaimed in a manner consistent with an overall management system. Tracts will be reclaimed to follow a management system compatible with landowner's postmine use. Reclaimed pastureland will be managed at levels recommended by United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) and the Texas

Agricultural Extension Service (TAES). Management activities may include soil amendments, mowing, haying, repairing rills and gullies, controlling weeds and insects and grazing activity.

- (2) *where range or grazing is the proposed postmining use, the detailed management plans to be implemented*

Rangeland and grazingland postmining land uses are not proposed for this permit.

- (3) *where a land use different from the premining land use is proposed, all materials needed for approval of the alternative use under §12.399 of this title (relating to Postmining Land Use)*

Alcoa Inc. proposes to change the land use classification from grazingland in poor condition, industrial/commercial, cropland, residential, and undeveloped land to pastureland, fish and wildlife habitat, industrial/commercial, and developed water resources.

Pastureland will be established by introducing grasses on reclaimed land where pastureland, grazingland, and undeveloped land occupied the premine areas (see Section 12.135). The proposed reclamation plan (described in Section 12.145) is similar to the plan currently in use in the Permit 1E area, which has proven feasible.

Impacts to fish and wildlife and proposed mitigation are discussed in Section 12.144 (Fish and Wildlife Plan). Section 12.144 also addresses the affects on threatened and endangered species within the mining area. Alcoa Inc. proposes measures for wildlife habitat including planting trees, shrubs, forbs and grasses in plots, corridors, hedgerows, and/or mottes. A mosaic of habitats will be interspersed in the reclaimed areas and corridors created to connect these features with undisturbed areas when possible. These features may also serve as loafing areas for livestock. Land management will ensure proper use of the vegetation communities.

Industrial/commercial lands will be stabilized to prevent erosion and be reclaimed to meet the intended use. The Class II/Class III land fill will be operated under a TCEQ permit, presented in Section .121 of this application. All drainage from the proposed landfill area is contained within the I/C areas as depicted on the maps.

Plans for postmining land uses have been prepared under the general supervision of a registered professional engineer to ensure that the plans conform to applicable acceptable standards for adequate land stability, drainages, vegetative cover and esthetics design appropriate for pastureland. Alcoa Inc. has the financial resources to implement the proposed plan.

Livestock production is the principal economic return from surrounding properties in the region. The proposed land use change will have a positive impact by increasing the amount of forage available for livestock production in pastureland and increased diversity in fish and wildlife habitat.

Postmining land uses were developed to enhance the future land use while maintaining land stability, vegetative cover, drainage and water quality and quantity. The proposed land use change is not expected to pose any threat to public health or contribute to air and water pollution. Reclamation activities

will be initiated as described in Table 145-1 of the reclamation plan, with no delays occurring due to the proposed land use changes.

The proposed land use changes are compatible with adjacent land uses and will not violate any existing local, state or federal land use policies. In addition, no public facilities will be required to support the land use changes.

(4) *the consideration which has been given to making all of the proposed surface mining activities consistent with surface-owner plans and applicable State and local land-use plans and programs*

Full consideration has been given to surface owner plans in the preparation of the postmining land use plan and in the mining activities in general. In particular, the plan was guided by landowners' comments included in Appendix 147-A in this Section. Reclamation plans were developed to incorporate requests made by all landowners affected by this permitting action.

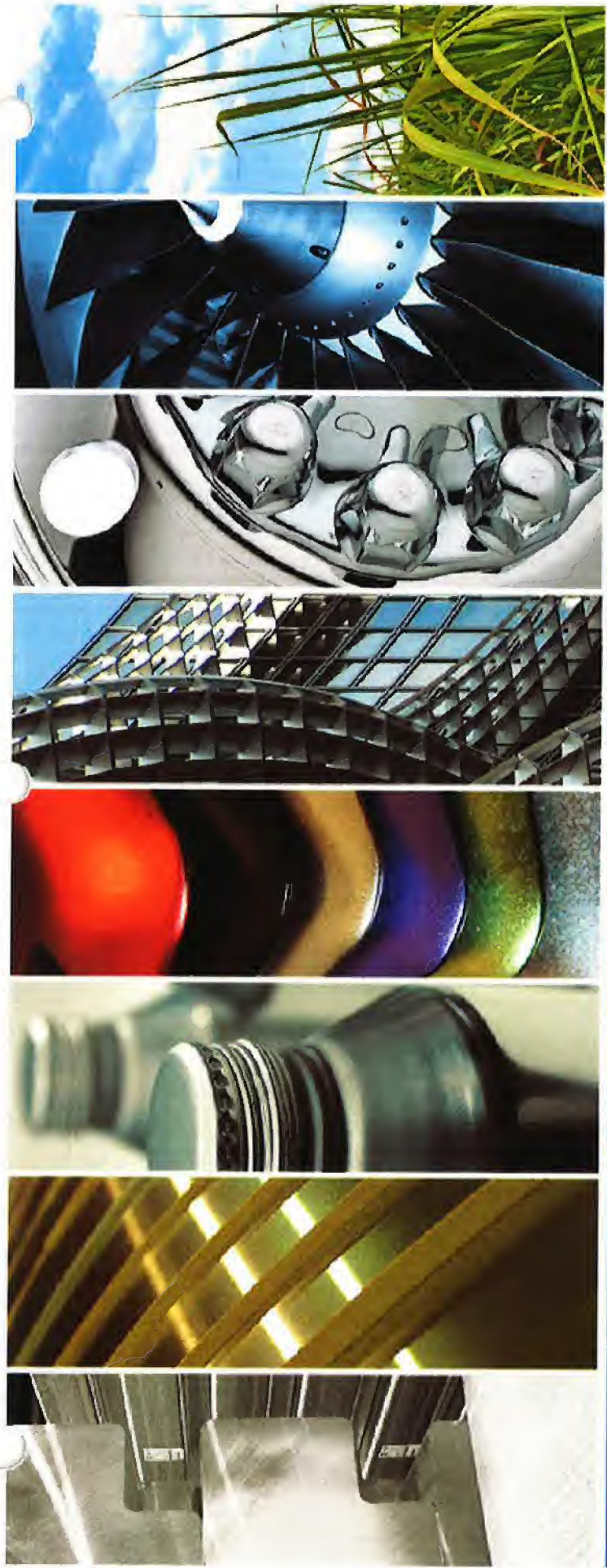
State and local agencies were contacted and available plans reviewed. In general, state and local plans for the area emphasize agricultural land use in the area. Alcoa Inc. works closely with the local County Soil & Water Conservation District, Natural Resource Conservation Service (NRCS), Texas Agriculture Extension Service (TAES), and Texas Parks and Wildlife Department (TWPd) in determining and establishing successful reclamation procedures.

(b) *The description shall be accompanied by a copy of the comments concerning the proposed use by the legal or equitable owner of record of the surface of the proposed permit area and the State and local government agencies which would have to initiate, implement, approve, or authorize the proposed use of the land following reclamation.*

As legal owner of the majority of the tracts within the permitted area, Alcoa Inc. is aware of and authorizes all alternative post mine land uses from premine land uses described in Section 12.135 (Land Use Information). Alcoa Inc. has provided comments authorizing the alternative land use to Industrial/Commercial, and are presented in Appendix B. Alcoa Inc. has received comments concerning the alternative postmine land uses for lease tracts, specifically Lease #6 owned by A.H. Sorenson, Lease#16 owned by Jo Ann D. Hall, Lease #24 owned by George T. Shannon. Copies of the acknowledgment letters from these landowners are contained in Appendix 147-B of State Mining Permit No. 1E.

TCEQ has approved and authorized the Class II/Class III Land Fill. The facility will operate under TCEQ regulations.

DIST TYPE	LAND USE	STATUS	ACRES	WAS	WAS
DIST	I/C	ALLU_P1F_REV56	1956.32	POND 026	PASTURE
DIST	I/C	PROPOSED	407.29	65.62	341.67
DIST	PASTURE	ALLU_P1F_REV56	6629.8		407.29
DIST	POND	ALLU_P1F_REV42	558		
DIST	TREE	ALLU_P1F_REV56	387.16		
			9938.57		

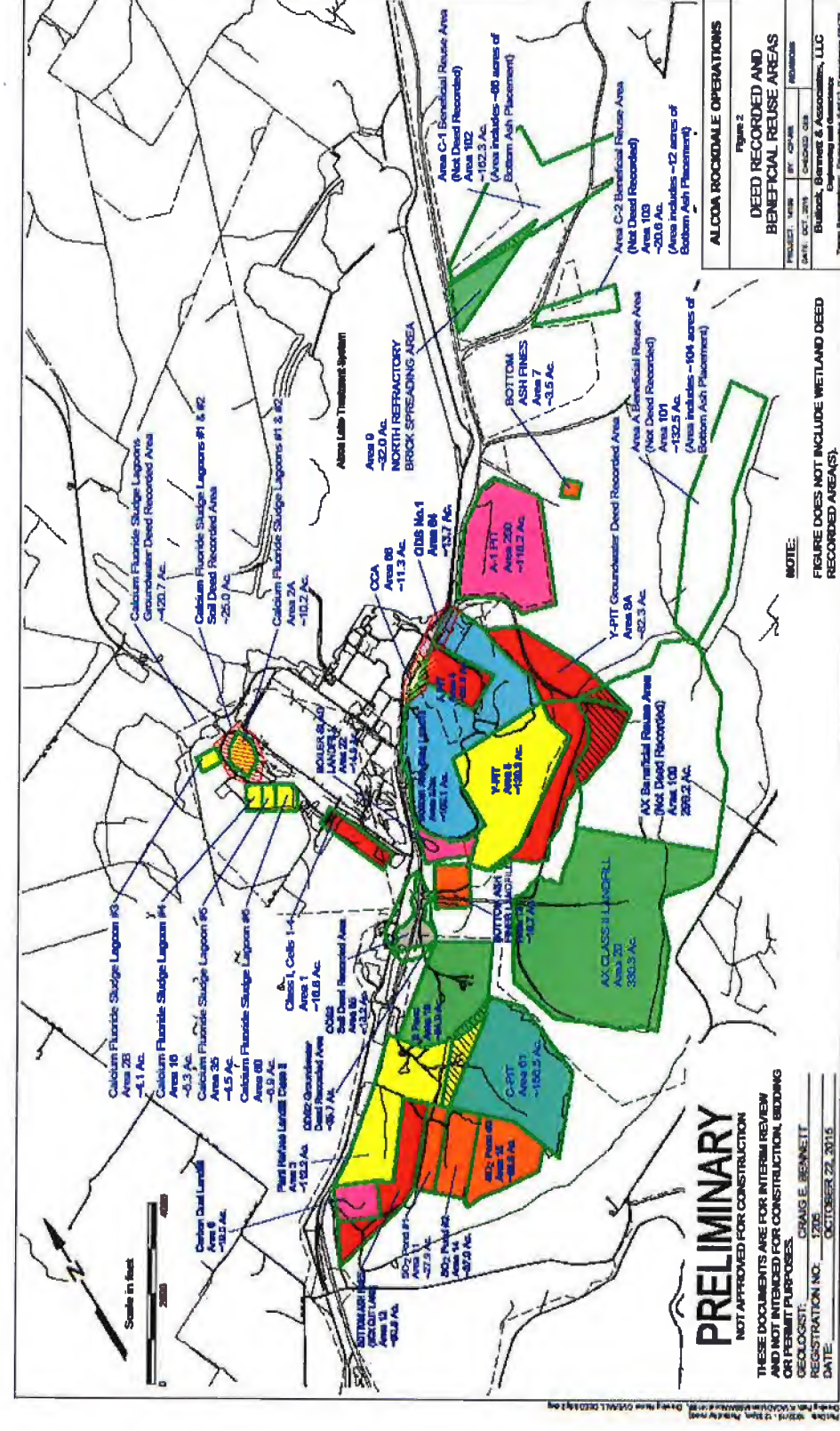


Advancing each generation.

Alcoa Rockdale Landfills

2015 October 22

Rockdale Operation Landfill Areas Map



A Pit (Area 4), Central Crusher (Area 66)



Y Pit (Area 8/8A)



B Pit (Area 19)



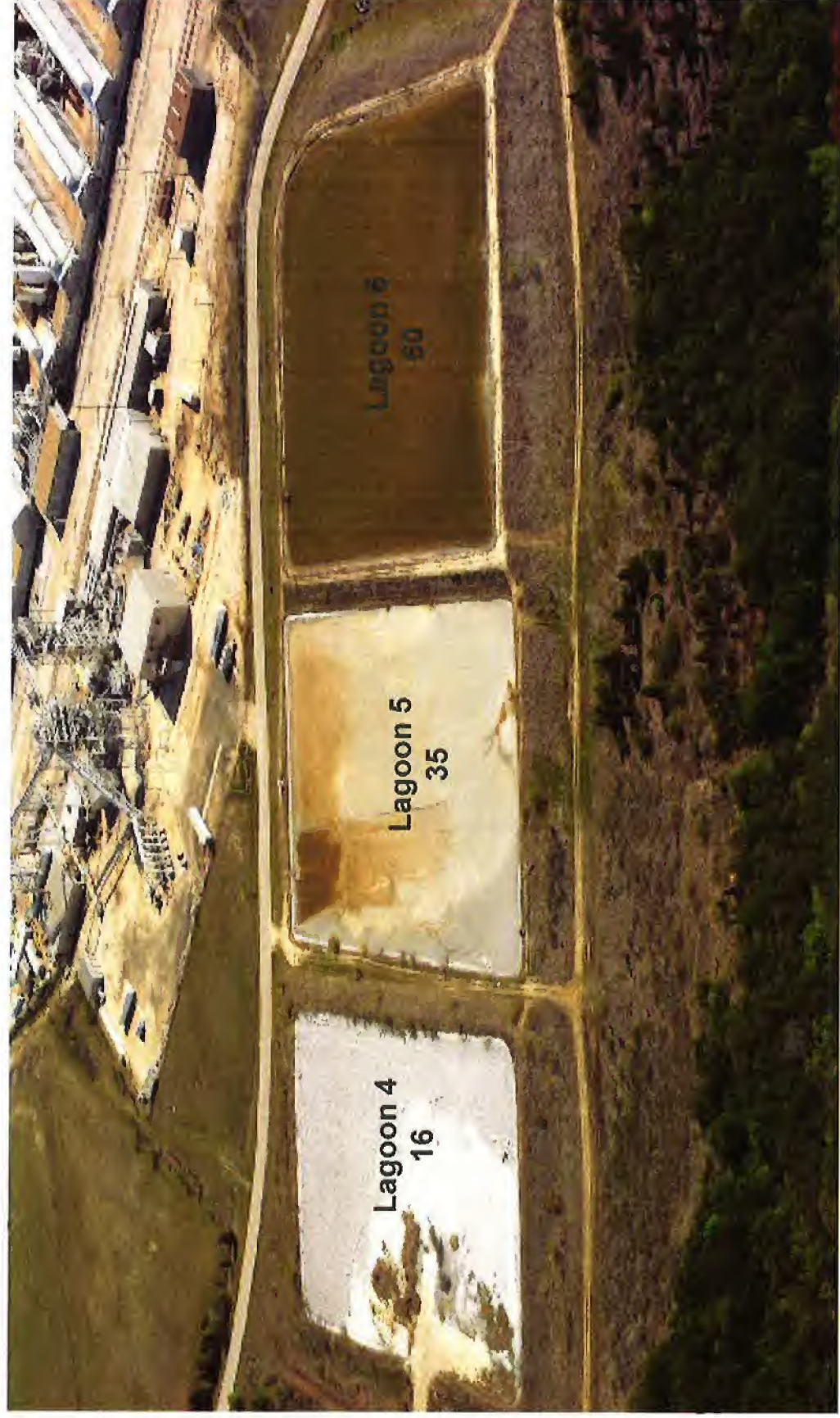
Calcium Fluoride Lagoon 1 (Area 2A), 2 (Area 2A)



Calcium Fluoride Lagoon 3 (Area 2B)



Calcium Fluoride Lagoon 4 (Area 16), 5 (Area 35), 6 (Area 60)



Carbon Dust (Area 6), Bottom Ash Box Cut Lake (Area 12)



Class I Landfill 1 – 3 (Area 1), 4 (Area 1)



ODS 1 (Area 64)



ODS 2 (Area 65)



SO2 Ponds 1 (Area 11), 2 (Area 14), 3 (Area 15)



Bottom Ash Fines (Area 13)



Boiler Slag Landfill (Area 22)



Bottom Ash Slag Landfill (Area 5/5A)



Bottom Ash Fines (Area 7)



C Pit (Area 61)



AX (Luminant) (Area 20)



A1 (Luminant) (Area 200)



N Refractory Brick Spreading Area (Area 9)



Plant Refuse Landfill (Area 3)



AX Beneficial Use (Alcoa) (Area 100)

Not Deed Recorded



Area A Beneficial Reuse (Area 101)

Not Deed Recorded



Area C1 (Area 102), Area C2 (Area 103) Beneficial Use

Not Deed Recorded



Advancing each generation.









As part of the ongoing operations at the Sandow Industrial and Mining Complex since the early 1950s, a system of landfills has been installed to handle the waste materials generated by the industrial processes in use. These landfills have been classified into 32 individual areas covering approximately 1,850 acres. These areas are shown on




















































“Deed Recorded and Beneficial Reuse” map (). Eighteen of the areas have been capped or closed. The balance of the areas are either in operation as part of the ongoing processes, used as staging/work areas for combustion by-product disposal, or in the process of being closed. Where required, landfill areas are authorized by appropriate permits and approved monitoring activities are being performed as required
















































by permit. A Ground Water Well Map () showing the location of all Ground Water Monitoring Well associated with the Landfill Areas is included here for reference.





















Landfill Name	Ground Water Monitoring	Photo	Landfill Class	Deed	Alcoa Rockdale Landfills PP Slide No.
A Pit  A PIT.pdf	 Table 1 A_YPIT WELLCON.pdf  Table 2 WATLEV.XLS.pdf  Table 3 A_Y Pit GW Analytical Data Table	 A Pit Crusher.pdf	II	 A Pit & Area 5.pdf	3
















<div>Y Pit</div> <div> Y PIT.pdf</div>	<div> Table 1 A_YPIT WELLCON.pdf</div> <div> Table 2 WATLEV.XLS.pdf</div> <div> Table 3 A_Y Pit GW Analytical Data Table</div>	<div> Y Pit.pdf</div>	II	<div> Y Pit - Area 8 & 8a.pdf</div>	4
<div>B Pond (a.k.a. B Pit)</div> <div> B Pond.pdf</div>	<div> Table 1 - B Pond Well Const. pdf</div> <div> Table 2 - B Pond GWElev. pdf</div> <div> Table 3 - B Pond lab data.pdf</div>	<div> B Pit. pdf</div>	II	<div> B Pond.pdf</div>	5
<div>Calcium-Fluoride Lagoon 1</div> <div> CFL1.pdf</div>	<div> Table 1 - WELLCON.pdf</div> <div> Table 2 - CFLWLEV.pdf</div> <div> Table 3 - CFL lab data.pdf</div>	<div> CFL 1 2 3 4 5 6.pdf</div>	II	<div> Calcium Fluoride Cell 1-6.pdf</div> <div> CFL 1-3.pdf</div>	6
<div>Calcium-Fluoride Lagoon 2</div>	<div> Table 1 - WELLCON.pdf</div> <div> Table 2 - CFLWLEV.pdf</div>	<div> CFL 1 2 3 4 5 6.pdf</div>	II	<div> CFL 1-3.pdf</div> <div> Calcium Fluoride Cell 1-6.pdf</div>	6











 CFL2.pdf					
Calcium- Fluoride Lagoon 3  CFL3.pdf	 Table 1 - WELLCON.pdf  Table 2 - CFLWLEV.pdf	 CFL 1 2 3 4 5 6.pdf	II	 Calcium Fluoride Cell 1-6.pdf  CFL 1-3.pdf	7
Calcium- Fluoride Lagoon 4  CFL4.pdf	 Table 1 - WELLCON.pdf  Table 2 - CFLWLEV.pdf	 CFL 1 2 3 4 5 6.pdf	II	 Calcium Fluoride Cell 1-6.pdf  26Mar2012 Calcium Fluoride Lagoon 4.pdf	8
Calcium- Fluoride Lagoon 5  CFL5.pdf	 Table 1 - WELLCON.pdf  Table 2 - CFLWLEV.pdf	 CFL 1 2 3 4 5 6.pdf	II	 Calcium Fluoride Cell 1-6.pdf  26Mar2012 Calcium Fluoride Lagoon 5.pdf	8
Calcium- Fluoride Lagoon 6  CFL6.pdf	 Table 1 - WELLCON.pdf  Table 2 - CFLWLEV.pdf	 CFL 1 2 3 4 5 6.pdf	II	 Calcium Fluoride Cell 1-6.pdf  26Mar2012 Calcium Fluoride Lagoon 6.pdf	8

<p>Carbon Dust Landfill</p> <p> CarbonDust.pdf</p>	<p> Table 1 - Carbon Dust LF WELLCON.pdf</p> <p> Table 2 -Carbon Dust LF GWElev.pdf</p> <p> Table 3 - Carbon Dust LF lab data.pdf</p>	<p> Carbon Dust Bottom Ash Box Cut.pdf</p>	<p>II</p>	<p> Area 6 - Carbon Dust.pdf</p>	<p>9</p>
<p>Central Crusher Area</p> <p> CCA.pdf</p>	<p> Table 1_wellconstruction.pdf</p> <p> Table 2_Water level.pdf</p> <p> Table 3_GWanalyticalSum.pdf</p>	<p> A Pit Crusher.pdf</p>	<p>Pre-K088 SPL</p>	<p> CCA.pdf</p>	<p>3</p>
<p>Class I Landfill Cells 1-3</p> <p> ClassI-Cells1-3.pdf</p>	<p> Table 1 - WELL CON.pdf</p> <p> Table 2 - GW ELEV.pdf</p> <p> Table 3 - Class I LF lab data.pdf</p>	<p> Class I Cells 1 2 3 4.pdf</p>	<p>Pre-K088 SPL</p>	<p> Class 1.pdf</p>	<p>10</p>
<p>Class I Landfill Cell 4</p> <p> ClassI-Cells 4.pdf</p>	<p> Table 1 - WELL CON.pdf</p> <p> Table 2 - GW ELEV.pdf</p>	<p> Class I Cells 1 2 3 4.pdf</p>	<p>I</p>	<p> Class 1.pdf</p>	<p>10</p>

	 Table 3 - Class I LF lab data.pdf				
Old Disposal Site No. 1  ODS1.pdf	 Table 1 - ODS1_WELLCON.pdf  Table 2 - ODS1 Wat Lev. pdf  Table 3 - ODS1 Lab Data.pdf	 ODS1.pdf	Pre-K088 SPL	 ODS1.pdf	11
Old Disposal Site No. 2  ODS2.pdf	 Table 1 WELLCON.pdf  Table 2 WATLEV.pdf  Table 3 GWANALY.pdf	 ODS2.pdf	Pre-K088 SPL	 ODS2.pdf	12
SO2 Pond 1  SO2 Pond 1.pdf	 Table 1 - GWElev.pdf  Table 2 - CSL WELLCON.pdf  Table 3 - CSL lab data.xlsx.pdf	 SO2 1 2 3.pdf	I	 SO2 Pond #1.pdf  SO2 Ponds 1-3.pdf	13
SO2 Pond 2	 Table 1 - GWElev.pdf	 SO2 1 2 3.pdf	I	 SO2 pond #2.pdf	13









 <p>SO2 Pond 2.pdf</p>	 <p>Table 2 - CSL WELLCON.pdf</p>  <p>Table 3 - CSL lab data.xlsx.pdf</p>			 <p>SO2 Ponds 1-3.pdf</p>	
<p>SO2 Pond 3</p>  <p>SO2 Pond 3.pdf</p>	 <p>Table 1 - GWElev.pdf</p>  <p>Table 2 - CSL WELLCON.pdf</p>  <p>Table 3 - CSL lab data.xlsx.pdf</p>	 <p>SO2 1 2 3.pdf</p>	I	 <p>SO2 Pond #3.pdf</p>  <p>SO2 Ponds 1-3.pdf</p>	13
<p>Bottom Ash (Box Cut Lake)</p>  <p>Bottom Ash (Box Cut Lake).pdf</p>		 <p>Carbon Dust Bottom Ash Box Cut.pdf</p>	III	 <p>Box Cut Lake - Area 12.pdf</p>	9
<p>Bottom Ash Fines</p>  <p>Bottom Ash Fines.pdf</p>		 <p>Bottom Ash Fines.pdf</p>	III	 <p>Area 13.pdf</p>	14
<p>Boiler Slag</p>  <p>Boiler Slag.pdf</p>		 <p>Boiler Slag.pdf</p>	III	 <p>Area 22.pdf</p>	15

Bottom Ash Slag  Bottom Ash Slag.pdf		 Bottom Ash - Slag.pdf	III	 A Pit & Area 5.pdf	16
Bottom Ash Fines (Area 7)  Bottom Ash Fines Area (Area 7).pdf		 Bottom Ash Fines Area 7.pdf	III	 Area 7.pdf	17
C Pit  CPit.pdf	 Table 1 - GWElev.pdf  Table 2 - CSL WELLCON.pdf  Table 3 - CSL lab data.xlsx.pdf	 C Pit.pdf	II	 C Pit.pdf	18
AX  AX (Class II).pdf		 AX.pdf	II	 AX Class II LF.pdf	19
A1  A1 Landfill.pdf		 A1 Pit.pdf	II	 A-1 Pit.pdf	20

<p>N Refract Brick Spreading Area</p> <p> N Refract Brick Spreading Area.pdf</p>		<p> N Refractory Brick Spreading Area.pdf</p>	III	<p> Area 9 North Refractory.pdf</p>	21
<p>Plant Refuse Landfill</p> <p> Plant Refuse.pdf</p>	<p> Table 1 Well Con.pdf</p> <p> Table 2 Watlevel.pdf</p> <p> Table 3 GW Analytical.pdf</p> <p> Table 4 GW Analytical.pdf</p>	<p> Plant Refuse.pdf</p>	II	<p> Plant Class 2.pdf</p>	22

Below are listed areas that have stored “Beneficial Reuse” products with the areas shown on the “Deed Recorded and Beneficial Reuse Map” above. These are Not Deed Recorded Areas.

Beneficial Reuse Area Name	Status	Photo	Landfill Class	Alcoa Rockdale Landfills PP Slide No.

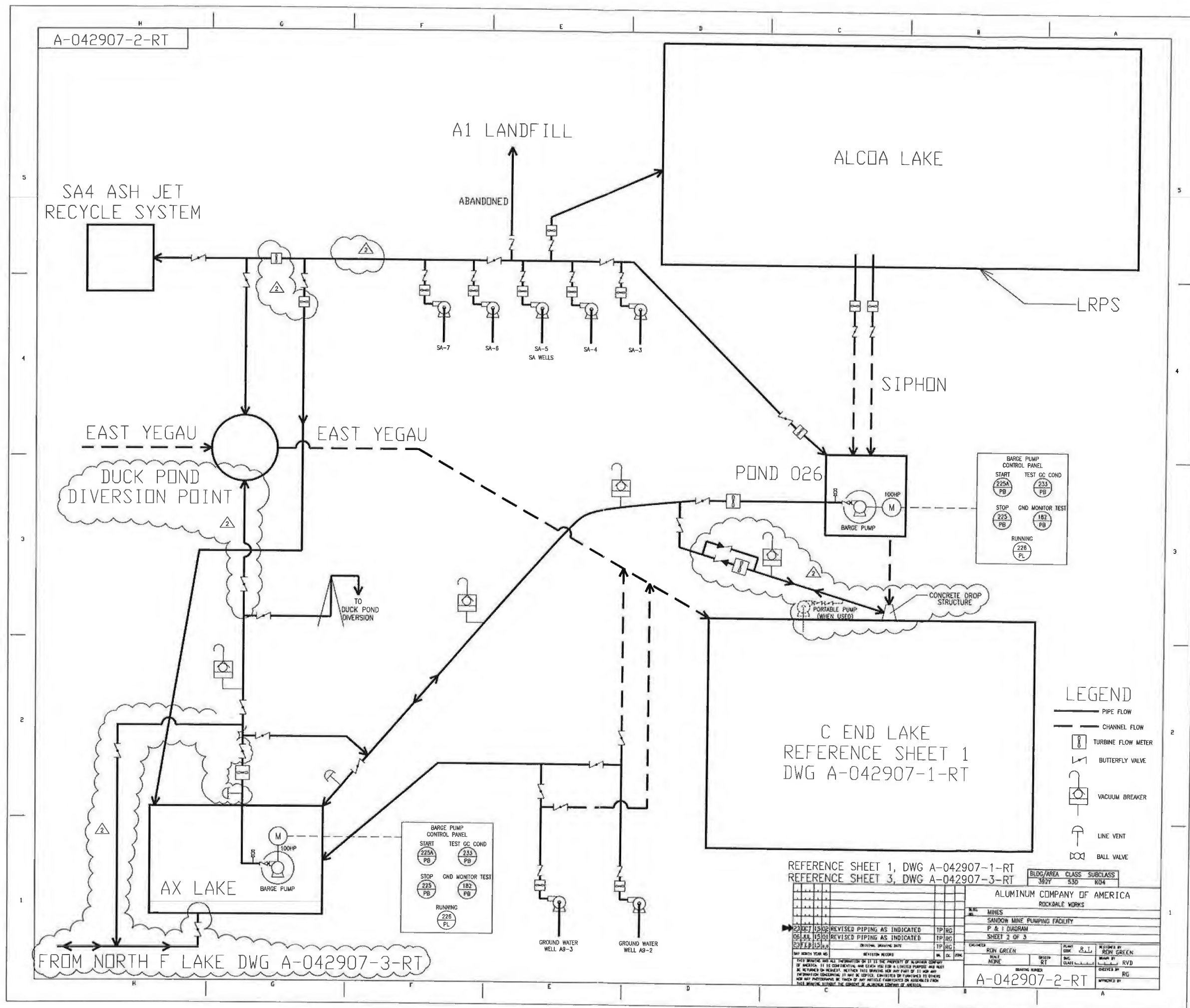
AX  AX (Beneficial Reuse).pdf	Operational	 AX Beneficial.pdf	NA	23
Area A  Area A (Beneficial Reuse).pdf	Soil Cover	 A Beneficial.pdf	NA	24
Area C-1  Area C-1 (Beneficial Reuse).pdf	Soil Cover	 C1 C2 Beneficial.pdf	NA	25
Area C-2  Area C-2 (Beneficial Reuse).pdf	Soil Cover	 C1 C2 Beneficial.pdf	NA	25

Reference Files:

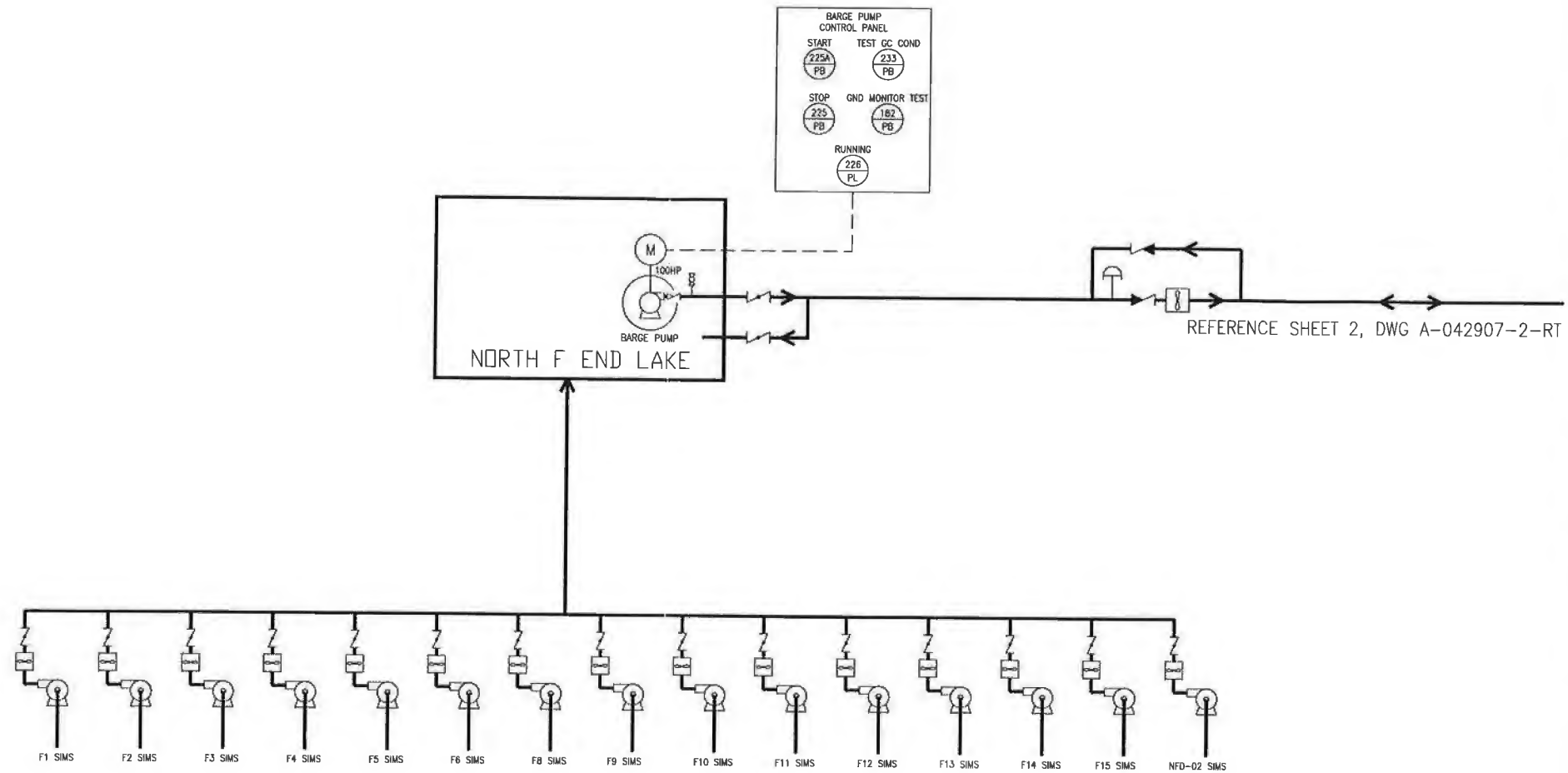
Deed Recorded Area Spreadsheet (Draft Landfills
Summary with Map R6)



External "Rockdale Landfills 10 22 2015.pptx"



A-042907-3-RT



LEGEND

- PIPE FLOW
- CHANNEL FLOW
- TURBINE FLOW METER
- BUTTERFLY VALVE
- VACUUM BREAKER
- LINE VENT
- BALL VALVE

REFERENCE SHEET 1, DWG A-042907-1-RT
REFERENCE SHEET 2, DWG A-042907-2-RT

BLDG/AREA	CLASS	SUBCLASS
382Y	530	K04
ALUMINUM COMPANY OF AMERICA ROCKDALE WORKS		
MINES		
SANDOW MINE PUMPING FACILITY		
P & I DIAGRAM		
SHEET 3 OF 3		
DESIGNED BY RON GREEN	CHECKED BY RON GREEN	DESIGNED BY RON GREEN
SCALE NONE	UNIT RT	CLASS RVD
DRAWING NUMBER A-042907-3-RT		APPROVED BY RG